INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior

National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)
Exp. Date (11/30/2010)
Form No. (10-226)

Reporting Year:	**Park:**	**Select the type of permit this report addresses:**
2007	Shenandoah NP	Scientific Study

Name of principal investigator or responsible official:	**Office Phone:**
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Additional investigators or key field assistants (first name, last name, office phone, office email)
No co-investigators

Project Title (maximum 300 characters):
Timber Rattlesnake Population Monitoring

Park-assigned Study or Activity #:	**Park-assigned Permit #:**	**Permit Start Date:**	**Permit Expiration Date:**
SHEN-00058	SHEN-2002-SCI-0022	Jan 01, 2002	Dec 31, 2008

Scientific Study Starting Date:	**Estimated Scientific Study Ending Date:**
Jun 01, 1990	Dec 31, 2027

For either a Scientific Study or a Science Education Activity, the status is:	**For a Scientific Study that is completed, please check each of the following that applies:**
Continuing	__ A final report has been provided to the park or will be provided to the park within the next two years __ Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park __ All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed

Activity Type:
Research

Subject/Discipline:
Herpetology (Amphibians / Reptiles)

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

1. Locate overwintering dens and birthing rookeries. 2.Determine movements of snakes. 3. Determine timing of seasonal activities. 4.Determine rates of growth, shedding, maturation, reproduction, and survivorship. 5. Investigate annual variations in life history characteristis. 6. Investigate relationship between weather, acorn production, rodents, and rattlesnake reproduction. 7. Investigate relationship between weather and failure to bring the young to term. 8. Determine long-term population trends.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

In 2007 9 days from 25 April to 31 October were spent in Shenandoah NP. The age-class distribution of the snakes encountered was 30 adults, 5 1-3-yr-old juveniles, and newborns and post-shed young-of-year from at least 9 litters. Three of the adults seen were near-term pregnant females and at 8 were post-partum.

Both emergence and ingress occurred about 5-7 days behind the average dates. Parturition occurred 1-2 earlier than is typical.

On 25 April at a relatively low-elevation site (1400-1700 ft) emergence was at an early stage and 8 snakes (5 adults) were seen, about half to two-thirds the expected number. On 11 May at the highest-elevation Shenandoah den (3200 ft) 6 snakes (4 adults) were seen. Again they appeared to be at an early stage of emergence.

Most births occurred during the latter half of August, 1-2 wk ahead of average dates due to a hot and dry summer. On 19 August at the afore-mentioned low-elevation site, one of 4 reproductive females was post-partum with young. On 8 September at a 2800 ft site, 3 post-partum females, sheds from 4 litters and one post-shed young with a meal bolus were seen. At the 3200-ft site, 3 post-partum females with newborns estimated at 4-5 days of age were seen. On a return visit on 8 October, one adult and two post-shed young were in the den, and two adults and 5 post-shed young were in the vicinity of the birthing site 150 meters distant. A high proportion of the young seen that day appeared to be emaciated and that could be attributed to failure to secure food and water due to lack of rain during the previous month.

Visits to other dens on 9 and 22 October were not very productive with one and two snakes seen. Apparently most entered hibernation during mid-October perhaps a week or so behind the typical dates. The accumulated cooling degree days were 14 days behind the average but the calendar through its effect on the biological clock also obviously influences the snakes.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):	**Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):**
$0	$2000

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year: